



## PATENT ABSTRACTS OF JAPAN

(11) Publication number: **02108544 A**  
 (43) Date of publication of application: **20.04.1990**

(51) Int. Cl. **B41J 2/045**

(21) Application number: **63263066**  
 (22) Date of filing: **19.10.1988**

(71) Applicant: **SEIKO EPSON CORP**  
 (72) Inventor: **KOTO HARUHIKO**  
**NAGASAKA FUMIO**

**(54) INKJET PRINTING HEAD****(57) Abstract:**

**PURPOSE:** To achieve easy manufacture of a printing head by letting the deformation of a movable mechanism section caused upon expansion, contraction or phase change of a member due to the temperature change by heat generation or heat absorption influence the movement of a liquid ink, whereby said ink is discharged.

**CONSTITUTION:** In printing, an ink is supplied from an ink feed hole 21 into containers 13, 14, and an electrode 15 is driven by a complimentary push-pull circuit. When the electrode 5 is made conductive in a positive direction, semiconductors 19, 20 generate heat at respective sides in contact with an electrode 18 by Peltier effect, while absorbing heat at the sides in contact with the electrode 15. Therefore, a polysulfone film 17 thermally expands and a polysulfone film 16 contracts. As a result, the vibrating plate as a whole is bent downwards, whereby the ink is discharged from a nozzle. When the electrode 15 is supplied with a current in a negative direction, the semiconductors at the sides in contact with the electrode 18 absorb heat and they at the sides in contact with the electrode 15 generate

heat, and accordingly the vibrating plate is returned almost in a horizontal direction. A printing head repeats power supplying the positive and negative directions alternately in accordance with printing data of every pixel, thereby performing printing. The vibrating plate of the printing head can be thus manufactured in an easy manner, for example, by bonding members each other.

COPYRIGHT: (C)1990,JPO&Japio

